

Chapter 3 Test Block Day

3-5 Proving lines parallel—Notes

If \parallel , corresponding angles are \cong .

If \parallel , alternate interior angles are \cong .

If \parallel , alternate exterior angles are \cong .

If \parallel , consecutive (same-side) interior angles are supplementary.

Converses are true as well.

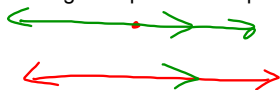
Postulate 3.4—If corresponding angles are \cong , then the lines are \parallel .

Theorem 3.7—If alternate interior angles are \cong , then the lines are \parallel .

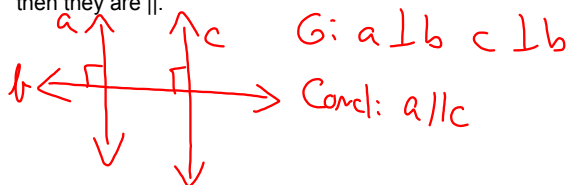
Theorem 3.5—If alternate exterior angles are \cong , then the lines are \parallel .

Theorem 3.6—If consecutive (same-side) interior angles are supplementary, then the lines are \parallel .

Postulate 3.5—The Parallel Postulate—If given a line and a point not on the line, then there exists exactly one line through the point that is parallel to the given line.



Theorem 3.8—In a plane, if 2 lines are \perp to the same line, then they are \parallel .



S.	R.
① $\angle 1 \cong \angle 2$	① Given
② $m \parallel m$	② If corr \angle s \cong , then \parallel .
③ $\angle 3 \cong \angle 4$	③ If \parallel , corr \angle s \cong

Ex 1

Given: $\angle 1 \cong \angle 2$
Prove: $\angle 4 \cong \angle 3$

Ex 2

Given: $\angle 1 \cong \angle 2$
 $\angle 4 \cong \angle 3$
 Prove: $\overline{AB} \parallel \overline{CD}$

① $\angle 1 \cong \angle 2$
 $\angle 4 \cong \angle 3$
 ② $\angle 2 \cong \angle 3$
 ③ $\angle 1 \cong \angle 4$
 ④ $\overline{AB} \parallel \overline{CD}$

① Given
 ② Vert. \angle s
 ③ Subst.
 ④ If alt int \angle s, then \parallel .

Ex 3

Given: $\angle 4 \cong \angle 7$
 $l \parallel m$
 Prove: $r \parallel s$

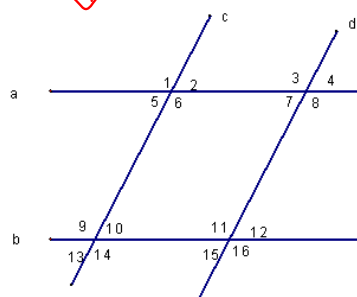
① $\angle 4 \cong \angle 7$
 $l \parallel m$
 ② $\angle 4 + \angle 6$ are supp
 ③ $m\angle 4 + m\angle 6 = 180$
 ④ $m\angle 4 = m\angle 7$
 ⑤ $m\angle 7 + m\angle 6 = 180$
 ⑥ $\angle 7 + \angle 6$ are supp
 ⑦ $r \parallel s$

① Given
 ② If \parallel , s-side int are suppl.
 ③ def of suppl.
 ④ def of \cong
 ⑤ subst
 ⑥ def of suppl
 ⑦ If s-side int \angle s are suppl, then \parallel

Which lines are parallel based on the given information?

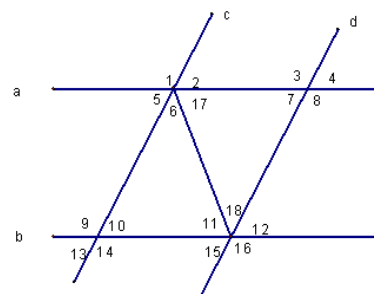
a and b \uparrow OR c and d \downarrow OR neither \rightarrow

- $\angle 1 \cong \angle 9$
- $\angle 13 \cong \angle 15$
- $\angle 7 \cong \angle 12$
- $\angle 3 \cong \angle 16$
- $\angle 1 \cong \angle 16$
- $m\angle 8 + m\angle 12 = 180$
- $m\angle 2 + m\angle 3 = 180$
- $m\angle 10 + m\angle 15 = 180$
- $\angle 13 \cong \angle 12$
- $\angle 1 \cong \angle 6$



11. $\angle 11 \cong \angle 17$

12. $\angle 18 \cong \angle 6$



HW
p155-156
#s 13-20, 26-31, 34